

1 Karnough Examples:

Example: Example 19, p. 664: $x_1x_2x_3 + x_1'x_2x_3 + x_1'x_2x_3'$

	x_1x_2	x_1x_2'	$x_1'x_2'$	$x_1'x_2$
x_3	1			1
x_3'				1

	x_1x_2	x_1x_2'	$x_1'x_2'$	$x_1'x_2$
x_3	1			1
x_3'				1

A four-variable example.

	x_1x_2	x_1x_2'	$x_1'x_2'$	$x_1'x_2$
x_3x_4	1			1
x_3x_4'				1
$x_3'x_4'$				1
$x_3'x_4$				1

	x_1x_2	x_1x_2'	$x_1'x_2'$	$x_1'x_2$
x_3x_4	1			1
x_3x_4'				1
$x_3'x_4'$				1
$x_3'x_4$				1

Example: Example 19, p. 664 (Again! – now let's simplify): $x_1x_2x_3 + x_1'x_2x_3 + x_1'x_2x_3'$

	x_1x_2	x_1x_2'	$x_1'x_2'$	$x_1'x_2$
x_3	1			1
x_3'				1

	x_1x_2	x_1x_2'	$x_1'x_2'$	$x_1'x_2$
x_3	1			1
x_3'				1

There may be multiple simplifications of a Boolean expression:

Example: Exercise #1, p. 678

	x_1x_2	x_1x_2'	$x_1'x_2'$	$x_1'x_2$
x_3			1	1
x_3'	1	1		1

	x_1x_2	x_1x_2'	$x_1'x_2'$	$x_1'x_2$
x_3			1	1
x_3'	1	1		1

Example: Exercise #5, p. 678 (We may need to look for quads, rather than pairs:)

	x_1x_2	x_1x_2'	$x_1'x_2'$	$x_1'x_2$
x_3x_4		1		
x_3x_4'		1	1	1
$x_3'x_4'$	1	1	1	
$x_3'x_4$		1		

	x_1x_2	x_1x_2'	$x_1'x_2'$	$x_1'x_2$
x_3x_4		1		
x_3x_4'		1	1	1
$x_3'x_4'$	1	1	1	
$x_3'x_4$		1		

Example: Exercise 21, p. 681

	x_1x_2	$x_1x'_2$	$x'_1x'_2$	x'_1x_2
x_3	1	1	1	1
x'_3	1			1

	x_1x_2	$x_1x'_2$	$x'_1x'_2$	x'_1x_2
x_3	1	1	1	1
x'_3	1			1

2 Quine-McCluskey Examples:

Example: Exercise 21, p. 681

	x_1x_2	$x_1x'_2$	$x'_1x'_2$	x'_1x_2
x_3	1	1	1	1
x'_3	1			1

This is the basic starting table:

# of 1s	x_1	x_2	x_3
3	1	1	1
2	1	1	0
	1	0	1
	0	1	1
1	0	0	1
	0	1	0

Example: Exercise 24, p. 682 (or Exercise 21 above, for a simpler example)

	x_1x_2	$x_1x'_2$	$x'_1x'_2$	x'_1x_2
x_3x_4	1	1	1	1
$x_3x'_4$				
$x'_3x'_4$		1	1	1
x'_3x_4	1	1	1	1

Example: Exercise 23, p. 682 illustrates the use of the second type of table.

# of 1s	x_1	x_2	x_3	x_4
3	1	1	1	0
2	1	0	1	0
	1	0	0	1
	0	0	1	1
1	1	0	0	0
	0	1	0	0
	0	0	1	0
0	0	0	0	0